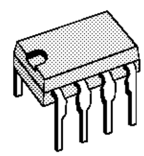
SGS-THOMSON MICROELECTRONICS

TDA4950

TV EAST/WEST CORRECTION CIRCUIT

- LOW DISSIPATION
- SQUARE GENERATOR FOR PARABOLIC CURRENT
- EXTERNAL KEYSTONE ADJUSTMENT (symmetry of the parabola)
- INPUT FOR DYNAMIC FIELD CORRECTION (beam current change)
- STATIC PICTURE WIDTH ADJUSTMENT
- PULSE-WIDTH MODULATOR
- FINAL STAGE D-CLASS WITH ENERGY REDELIVERY
- PARASITIC PARABOLA SUPPRESSION, DURING FLYBACK TIME OF THE VERTICAL SAWTOOTH



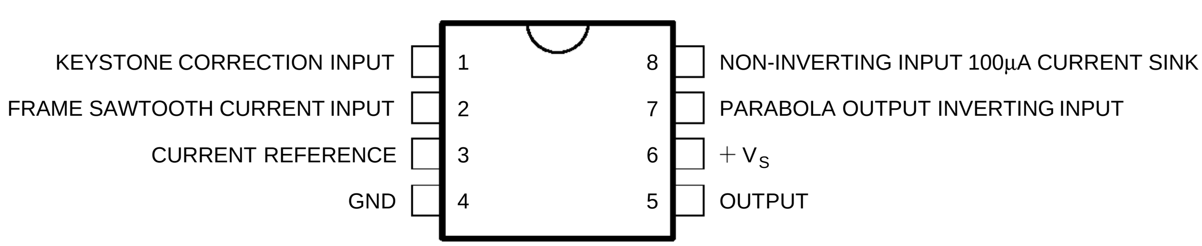
DIP8
(Plastic Package)

ORDER CODE : TDA4950

DESCRIPTION

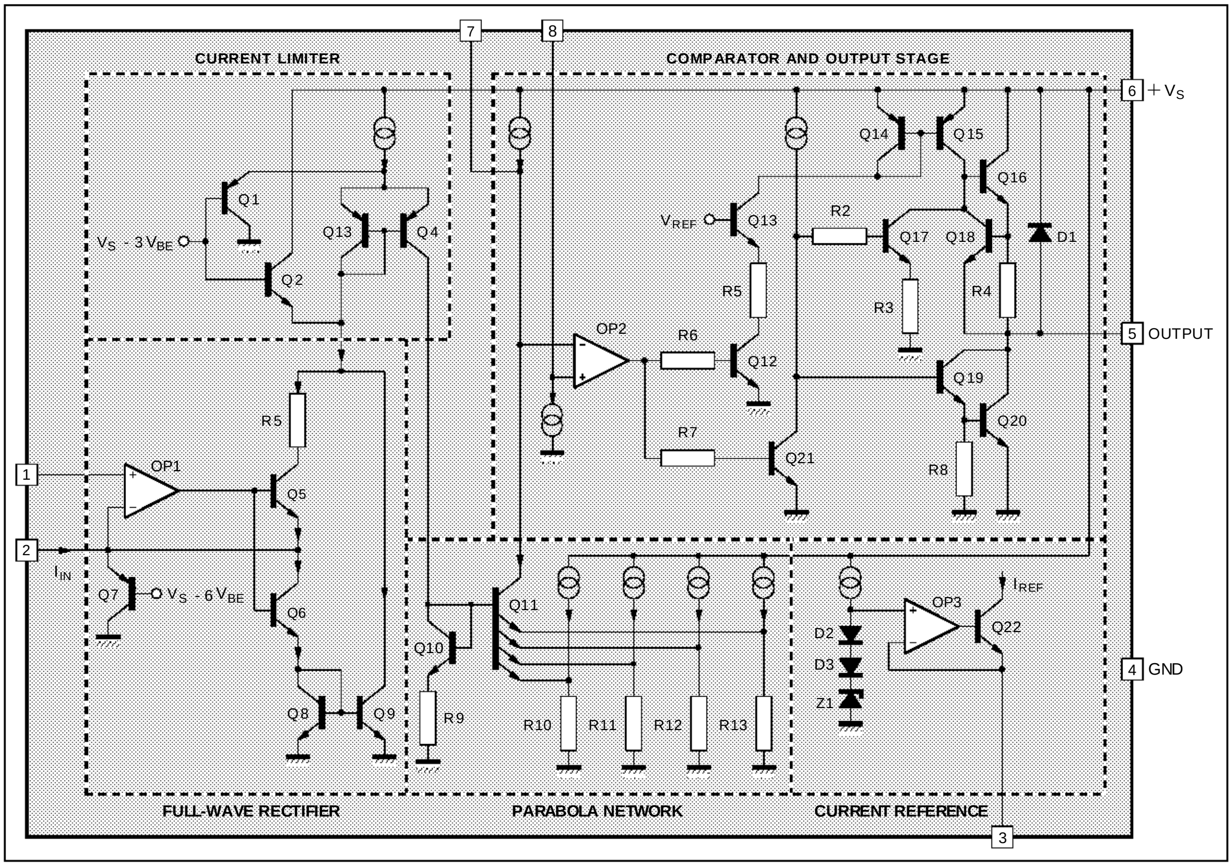
The TDA4950 is a monolithic integrated circuit in a 8 pin minidip plastic package designed for use in the east-west pin-cushion correction by driving a diode modulator in TV and monitor applications.

PIN CONNECTIONS



4950-01.EPS

BLOCK DIAGRAM



4950-02.EPS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	35	V
I_S	Supply Current	500	mA
P_{tot}	Power Dissipation at T_{amb} = 70 °C	800	mW
T_{stg}, T_j	Storage and Junction Temperature	– 25, +150	°C

4950-01.TBL

THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th\ (j\text{-}a)}$	Thermal Resistance Junction-ambient	Max.	100	°C/W
$R_{th\ (j\text{-}c)}$	Thermal Resistance Junction-pin (4)	Max.	70	°C/W

4950-02.TBL

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C, V_S = 26 V, V_{fr} = 0, S1 and S2 in ”a” position, refer to test circuit unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_S	Supply Voltage		17	24	30	V
I_S	Supply Current			4.5	7	mA
V_{ref}	Internal Reference Voltage		7.6	8.0	8.8	V
$-I_{ref}$	Internal Reference Current	V_{ref}/R3		0.73		mA
$V_{7(A)}$	Pin 7 Output Voltage	I_{fr} = 0 µA, see Figure 2	15.3	16.0	16.7	V
$V_{7(B)}$	Pin 7 Output Voltage	I_{fr} = 30 µA, see Figure 2		15		V

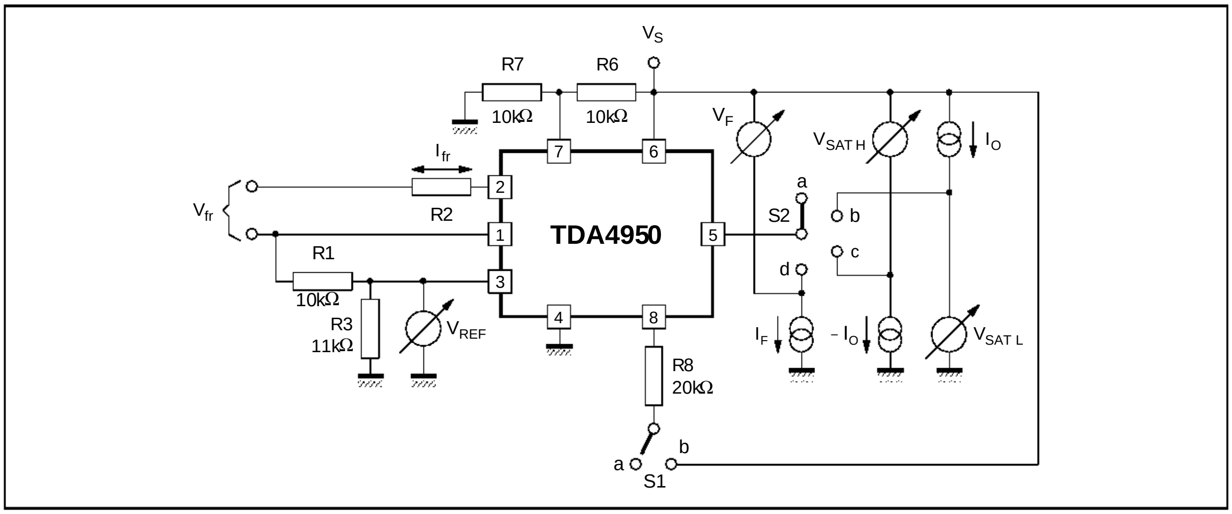
4950-03.TBL

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C, V_S = 26 V, V_{fr} = 0, S1 and S2 in ”a” position, refer to test circuit unless otherwise specified) (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
K1	Parabola Coefficient	$K_1 = \frac{V_{7A} - V_{7B}}{V_{7A} - V_{7C}}$, see Figure 2		0.28		
K_2	Parabola Coefficient	$K_2 = \frac{V_{7A} - V_{7C}}{V_{7A} - V_{7D}}$, see Figure 2		0.71		
ΔV_7 (*)		$\Delta V_7 = V_{7E} - V_{7F}$, see Figure 2	– 40		40	mV
I_8	Current Source	S1 → b		100		µA
V_{SATL}	Saturation Voltage	Io = 400 mA Sink S2 → b		1	2	V
V_{SATH}	Saturation Voltage	Io = 100 mA Source S2 → c S1 → b		0.8	1.5	V
V_F	Forward Voltage	I_o = 400 mA S2 → d S1 → b		1.2	1.7	V
I_{fr}	Frame Sawtooth Current	V_{fr} = 6.6 V_{PP}		66		µA

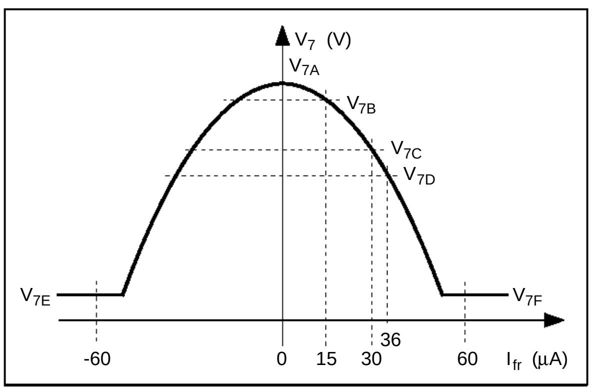
4950-04.TBL

Figure 1 : Test CIrcuit



4950-03.EPS

Figure 2 : Parabola Characteristics



4950-04.EPS

CIRCUIT OPERATION

(see the shematic diagram)

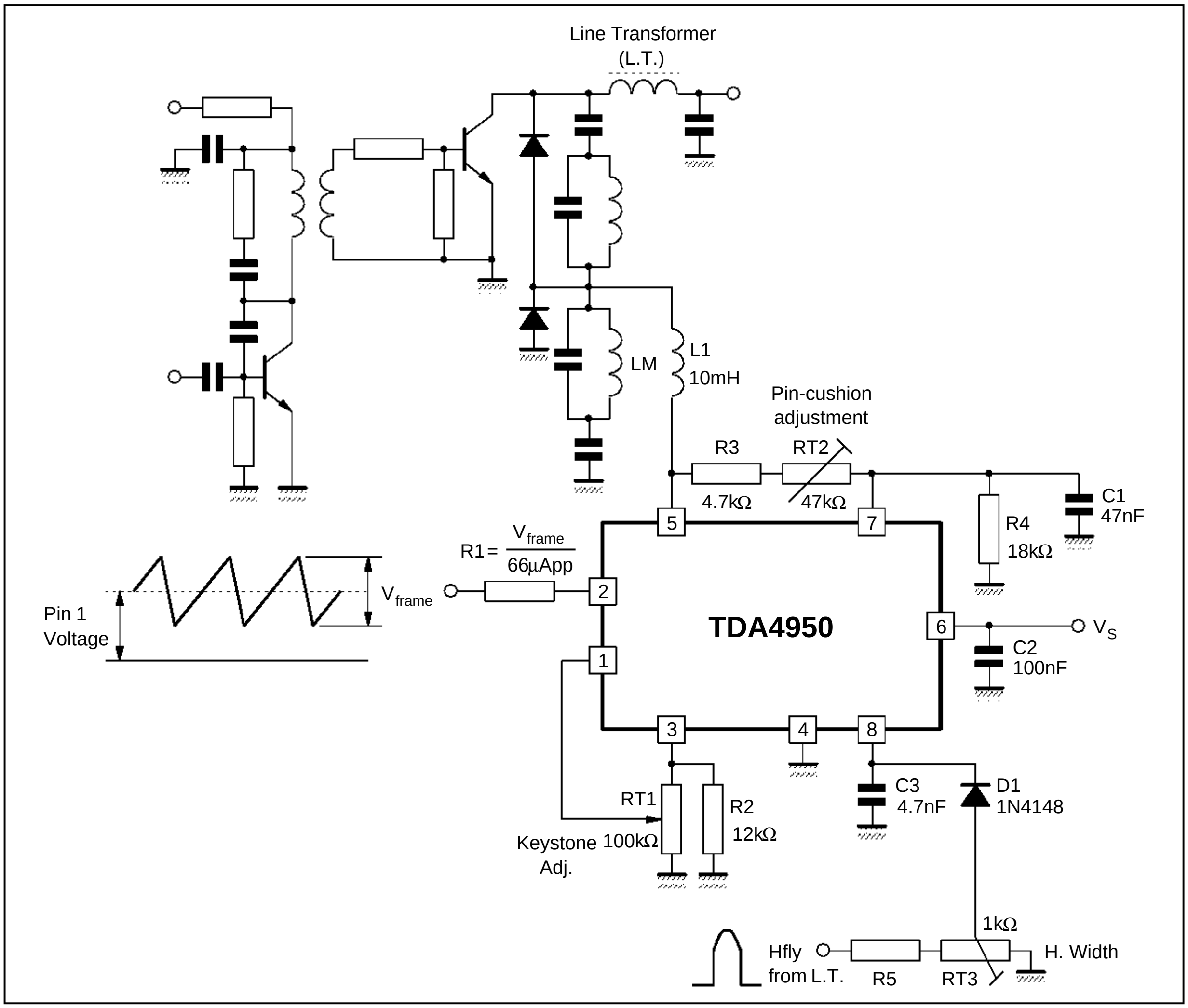
A differential amplifier OP1 is driven by a vertical frequency sawtooth current of ± 33µA which is produced via an external resistor from the sawtooth voltage. The non-inverting input of this amplifier is connected with a reference voltage corresponding to the DC level of the sawtooth voltage. This DC voltage should be adjustable for the keystone correction. The rectified output current of this amplifier drives the parabola network which provides a parabolic output current. This output current produces the corresponding voltage due to the voltage drop across the external resistor at pin 7.

If the input is overmodulated (> 40µA) the internal current is limited to 40µA. This limitation can be used for suppressing the parasitic parabolic current generated during the flyback time of the frame sawtooth.

A comparator OP2 is driven by the parabolic current. The second input of the comparator is connected with a horizontal frequency sawtooth voltage the DC level of which can be changed by the external circuitry for the adjustment of the picture width.

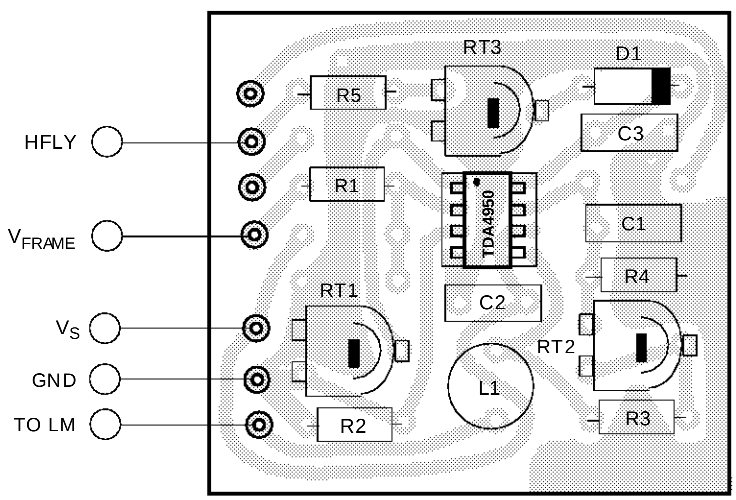
The horizontal frequency pulse-width modulated output signal drives the final stage. It consists of a class D push-pull output amplifier that drives, via an external inductor, the diode modulator.

Figure 3 : Application Circuit with Keystone Correction



4950-05.EPS

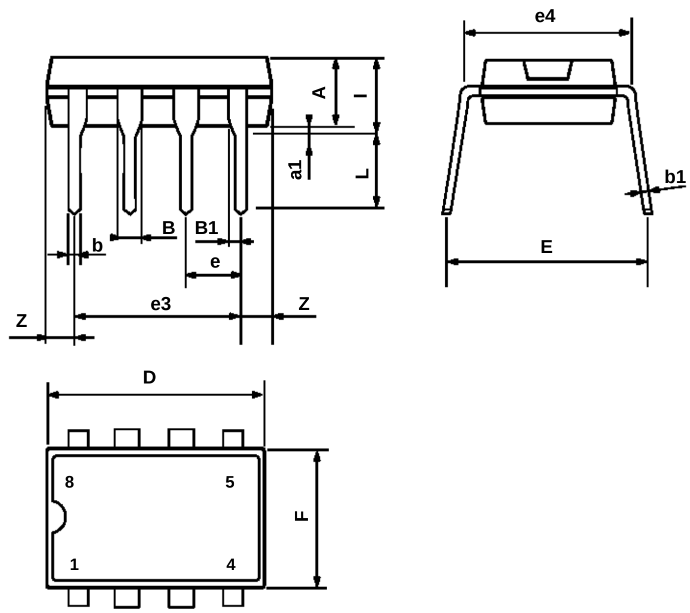
Figure 4 : P.C. Board and Component Layout of the Circuit of Figure 3 (1:1 scale)



4950-06.EPS

PACKAGE MECHANICAL DATA

8 PINS - PLASTIC DIP



PM-DIP8.EPS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060

DIP8.TBL

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